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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,351	07/11/2002	Jenny Kingston	08364.0037	7928

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EXAMINER
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FRANK, RODNEY T

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/069,351	KINGSTON ET AL.	
	Examiner	Art Unit	
	Rodney T. Frank	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-58,60-78,80-96,100,109,112 and 114 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 78,80-96,100,109 and 112 is/are allowed.
- 6) ☒ Claim(s) 31-58,60-77 and 114 is/are rejected.
- 7) ☒ Claim(s) 38 and 66 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 31-33, 41-43, and 114 are rejected under 35 U.S.C. 102(e) as being anticipated by Davison (U.S. Patent Number 5,834,633). Davison discloses a probe device for use in measuring trace quantities of a component in a liquid environment comprises: (i) a membrane which is permeable to the component; and (ii) a layer of a material capable of binding the component and arranged to receive material which has permeated through the membrane from a face thereof juxtaposed to the fluid environment. The membrane may, for example, be a polyacrylamide gel and the material an ion exchange resin. The device may be used, for example, for determining quantities of trace metals in an aqueous environment (Please see the abstract).

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3. In regard to claim 31, Davison discloses and shows specifically with regard to figures 1, 3, 4, and 5, a passive sampling device for accumulating over a period of time micropollutants from an aquatic environment, which device comprises a diffusion-limiting membrane (2) contactable in use with the aquatic environment to be monitored and adapted to allow rate-limited diffusion therethrough of the micropollutants, and a receiving phase (3) having a sufficiently high affinity for the micropollutants for receiving and retaining the micropollutants, wherein the receiving phase is

(i) a removable unitary element

(ii) separated from the aquatic environment by said membrane,

(iii) comprised of a solid phase material immobilized by being bound in or to a

hydrophobic solid support. (Also, see column 6 line 53 through column 7 line 46

whereby Davison discloses the use of the device for accumulating a substance and various tests done to do so.)

In reference to claims 32-33, the use of an ion permeable gel membrane for the diffusion limiting membrane, and in column 4 lines 9-17, the water impermeable barrier (5) would disclose the solid carrier which does not retain water and contains less than 1% water whereby said support is not subject to loss of water and hence changes in dimension.

In reference to claim 41, Davison discloses in column 4 lines 18 through 21 that the receiving phase (layer 3) has a thickness from 10 to 1000 microns (0.1 to 1 mm).

In reference to claim 42, figure 3 shows the receiving phase in the form of a disk that would fit into a recess (104) of an embodiment of the Davison invention.

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In reference to claim 43, column 3 lines 23 through 40 disclose the solid phase material for the receiving phase contains an absorbent, for example C<sub>18</sub>.

Claim 114 is essentially the same as claim 31, which is described in detail above, and therefore the method of utilizing the apparatus of claim 31 is also deemed as disclosed in view of the Davison reference.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 47, 48, and 50-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davison.

With regard to claim 47, Davison discloses the use of a housing where the membrane and receiving phase are removably mountable (see figure 3). Though it is not specifically disclosed that the housing is inert, one of ordinary skill in the art would be motivated to have the housing not alter the operation of the device in order to obtain the most successful results, and therefore the use of an inert housing is seen as obvious to one of ordinary skill in the art at the time of the invention.

With regard to claim 48, column 6 lines 53 through 61 disclose that the receiving phase is hydrated after casting.

With regard to the method disclosed in claims 50-57, since the device is deemed to be disclosed, though the method of using said device is not explicitly spelled out, it is

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deemed to be disclosed since one of ordinary skill in the art would have to be able to use a device that has been disclosed. Also, the method is essentially disclosed in view of the disclosure at column 5 lines 40 through 46 and column 6 lines 53 through 66.

6. Claims 34-36, 39-40, 46, 48, 49, 58, 60-64, 67-71, 74, and 75-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davison as applied to claims 31-33, 41-43, 47, 48, 50-57, and 114 above, and further in view of Byrne (U.S. Patent Number 4,902, 117). Byrne discloses that a device and method are provided for monitoring the metal content of aqueous systems. The device involves the use of a porous membrane permeable to the metal ions to be detected in an aqueous phase and an organic liquid medium containing a trapping agent for the ions and capable of forming therewith a complex soluble in the organic liquid medium. The organic medium with its trapping agent is contained in a housing with an opening covered by the membrane, which can be presented to the aqueous phase.

The device and method allow the aqueous and organic phases to wet opposite faces of the membrane so that ion transfer can take place across the membrane. The trapped ions are analyzed at intervals by conventional means (Please see the abstract).

The motivation to combine the teachings of Byrne with the teachings of Davison is two fold; first, both references are related based on the fact that Byrne and Davison disclose inventions related to diffusion through a membrane for aqueous systems. Second, since Davison discloses an embodiment shown in figure 4 that further has a filter (i.e. non-gel type membrane member), Byrne discloses that many types of

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membranes may be used for diffusion applications (see tables A and C of the Byrne reference for polycarbonates and other membranes that may be used.)

With respect to claims 35 and 36, the use of PTFE for the membrane is disclosed in Table A, and glass fiber is disclosed in Table C of the Byrne reference.

With respect to claims 39 and 40, the specific thickness of the membrane is disclosed in the Davison reference as discussed above, column 11 line 42 of Byrne discloses that thin membranes are desirable and therefore the actual thickness of the membrane would be a design choice well within the preview of one of ordinary skill in the art in view of the disclosures of Byrne in view of Davison.

With regard to claim 46, in column 32 lines 22 through 26 disclose the use of a 1-inch mesh protective cage.

With regard to claim 48, column 29 lines 57 through 60 disclose the use of the membrane being soaked in distilled water.

With regard to claim 49, though the use of a PTFE housing is not specifically disclosed, column 2 lines 64 through disclose a benefit of using PTFE since it does not break down with certain hydrocarbons, and therefore the use of such a material in the housing of the device would be obvious to one of ordinary skill in the art since it is disclosed in the same section to use PTFE gaskets and that such a housing would withstand the environment to be measured.

In reference to claim 58, this claim is essentially the same as claim 31, which was discussed in detail above, except there is the added limitation of the diffusion limiting membrane comprising a solid, hydrophobic polymeric material capable of

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determining the rate of diffusion of the micropollutants therethrough. Since Byrne discloses an equation to determine the diffusion rate, and this calculation is used for the various membranes described in the reference in order to make determination of diffusion rate for the various membranes and setups used in the Byrne reference, then this limitations is seen as disclosed since the equation could be used on the various membranes in order to determine the diffusion rate thereof.

Claims 60 and 61 are duplicates of claims 32 and 33, except they depend from claim 58. Since claims 32 and 33 are described at length above, claims 60 and 61 are deemed to be disclosed in view of the Davison and Byrne references.

With regard to claims 62-64, these claims are essentially duplicates of claims 34-36, which are discussed above in more detail.

With regard to claims 67-70, these are essentially the same as claims 39-42, which are described in more detail above.

With regard to claim 71, this is essentially the same as claim 43, which is discussed more in detail above.

With regard to claim 74, this is essentially the same as claim 46, which is discussed more in detail above.

With regard to claims 75-77, these claims are essentially the same as claims 47-49, which are discussed in greater detail up above.

7. Claims 34-37, 44, 45, 65, 72, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davison in view of Byrne as applied to claims 31-33, 35-36, 39-43, 46-58, 60-64, 67-71, and 74-77 above, and further in view of Ho et al. (U.S. Patent



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Number 5,552,053; hereinafter referred to as Ho). Ho discloses a solid poly-amphiphilic polymer. The polymer may be (1) a continuous film (a) which is strengthened sufficiently by cross-linking to be used alone and/or supported on a frame, (b) overlaid and/or cast on a porous hydrophobic support or (2) introduced into the pores of a microporous hydrophobic membrane. The present invention is also a process for selectively removing a dissolved species (solute or target compound) from an aqueous solution or from a gaseous stream comprising contacting said aqueous solution or gaseous stream having the dissolved species and an aqueous stripping solution or other means for removing said species with opposite sides or surfaces. (Please see the abstract). The motivation to combine the Ho reference with the other references is that all the references are related to using membranes for diffusion/separation processes. Ho discloses various materials that can be utilized for such a process.

With respect to claim 34, the use of polyethylene with the membrane is disclosed in column 2 line 15 of Ho.

With respect to claims 35 and 36, the use of polysulphone/ polysulfone, polycarbonate, cellulose acetate, PTFE, and glass fiber is disclosed in column 2 in lines 9-25 of Ho.

With respect to claim 37, the membrane being associated with a molecular charge sensitive material is disclosed in column 4 lines 39-49 of Ho.

With regard to claims 44 and 45, the support comprising a matrix of hydrophobic fibers is disclosed.

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With regard to claims 72 and 73, these claims are essentially the same as claims 44 and 45, which were discussed earlier in this rejection.

***Allowable Subject Matter***

8. Claims 38 and 66 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 78, 80-93, 100, 105, 109, 111, and 112 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter:

Claims 78 and 111 are allowed due to the diffusion limiting membrane having pores traversing the membrane in a direction substantially at right angles to the plane of the membrane with a specific diameter, in combination with all other limitations of the independent claims.

Claims 100, 109, and 112 are allowed due to the various materials, which can be selected for the molecular charge selective material of the diffusion membrane in combination with all other limitations of the independent claim.

Claim 105 is allowed due to the various materials, which can be selected for the coating or impregnating of the receiving phase, in combination with all other limitations of the independent claim.

***Response to Arguments***

11. Applicant's arguments with respect to claims 31-114 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

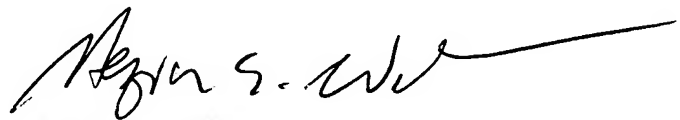
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (571) 272-2193. The examiner can normally be reached on M-F 9-5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTF  
September 1, 2005

A handwritten signature in black ink, appearing to read 'Hezron S. Williams', with a long horizontal flourish extending to the right.

HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800